RM

RECEIVED
MAY 31 3 12 PM '61
ROCKY MTN. STATION
FT. COLLINS, COLO.

-15

1 dist ea
field unit
1 - Lemky Hay
1 - Davis Hay

The 1960 Fire Season in the National Forests

Wdo
SD11
.A4595

F-494545

Started by lightning in July 1960, the Saddle Mountain Fire on the Bitterroot National Forest in Montana burned 3,050 acres and was controlled by ground and air attack on the eighth day.

Cover: A C-45 drops its load of liquid fire retardant. Aerial tankers have become a major weapon in fighting forest fires.

Prepared by the Division of Fire Control
Washington, D.C. April 1961

U.S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

1960 Fire Season in the National Forests

FIRE LOSSES in 1960 made it one of the all-time bad fire years for the U.S. Forest Service. There were 12,817 fires on the national forests--the greatest number since 1940 (fig. 1). The 421,000 acres burned was the largest acreage burned since 1942. In only four other years (1936, 1938, 1939, and 1940) have more fires occurred in the national forests. The previous 5-year average for number of fires is 9,715, and for area burned is 235,388 acres. Greatest increases were in Western Regions where fires were 142 percent and area burned was 211 percent of the 5-year average. More lightning fires occurred in 1960 than in any year since 1940. Man-caused fires were nearly 20 percent over the 5-year average.

Critical fire conditions first developed in 1960 in the Southwestern and California Regions. Severe weather conditions, combined with a drought buildup of several years, resulted in extremely dry forest fuels. Weather Bureau records showed that, for most of the West, precipitation had been only 50 percent of normal to July 1. Many fires started in June and a few became large and costly (fig. 2). A mid-July heat wave caused extreme high fire danger to spread over many areas west of the Continental Divide, culminating in one of the most critical fire situations ever experienced in the western States. Nearly 4,000 fires started in western Regions during July and burned more than 230,000 acres. Damage to heavily timbered areas, valuable watershed and other resources was immense, and rehabilitation will be costly.

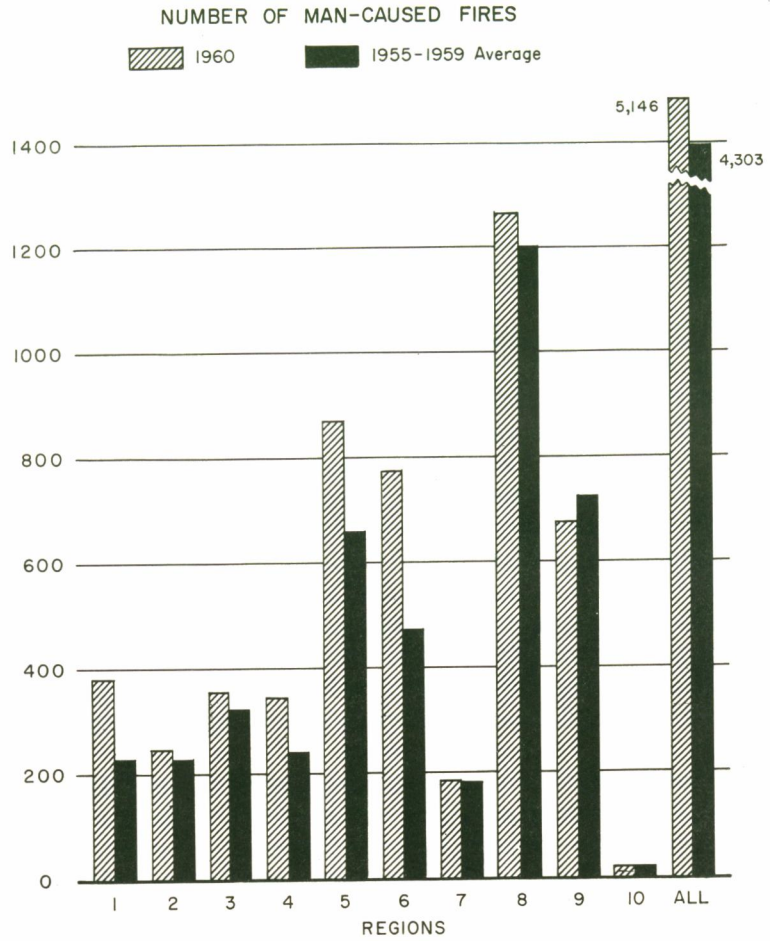

Figure 1.

Available manpower and equipment were quickly dispatched to each fire but trained personnel and specialized equipment for initial attack and reinforcement were far short of the need to meet the situation. To hold more of these fires to small size would have required a much greater initial-attack force with a capacity to make strong, fast followup. Peak employment of

fire fighters exceeded 25,000. Nearly 400 heavy-duty tractors, more than 600 pumpers, 319 aircraft, including 61 helicopters, and hundreds of trucks were required. Hundreds of supervisory personnel were transported mostly by air from other Forest Service Regions.

Special Program Effective

When extremely critical fire danger developed in mid-July, it seemed likely that these conditions would continue for the rest of the season. A special stepped-up program was put into effect to extend planned-in-advance air attack and to strengthen organized initial-attack and reinforcement crews for the balance of the fire season.

The program was effective and did much to keep down fire-fighting costs and losses. Fourteen air tanker bases were improved, and ground fire-fighting forces were greatly increased. Four new 30-man mobile attack crews were particularly effective on several fires. During the fall period, there were fewer large fires than usual. Weather conditions were more favorable, but much credit for better results was due to the strengthened program.

Loss of Life High

Eighteen persons lost their lives fighting forest fires on the national forests in 1960. Nine of these were airplane pilots on fire-fighting missions. Eight of the pilots were employed by contractors and one was a regular Forest Service pilot. An assistant ranger was killed in

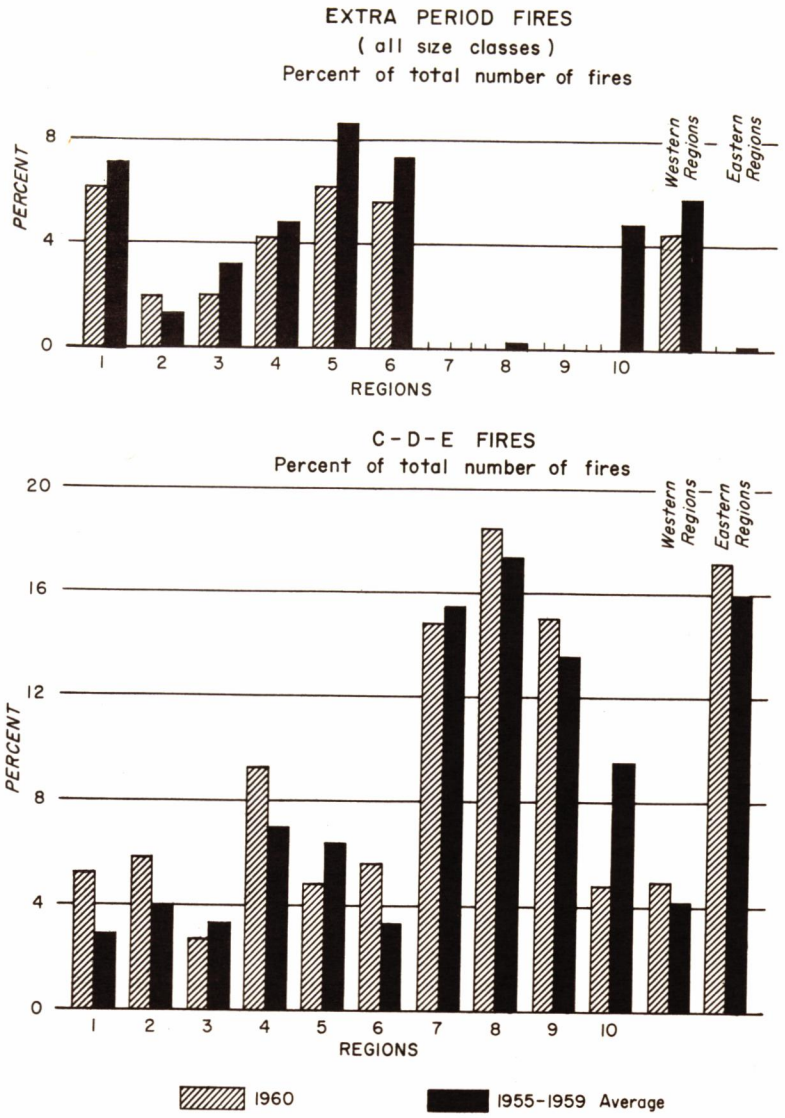

Figure 2.

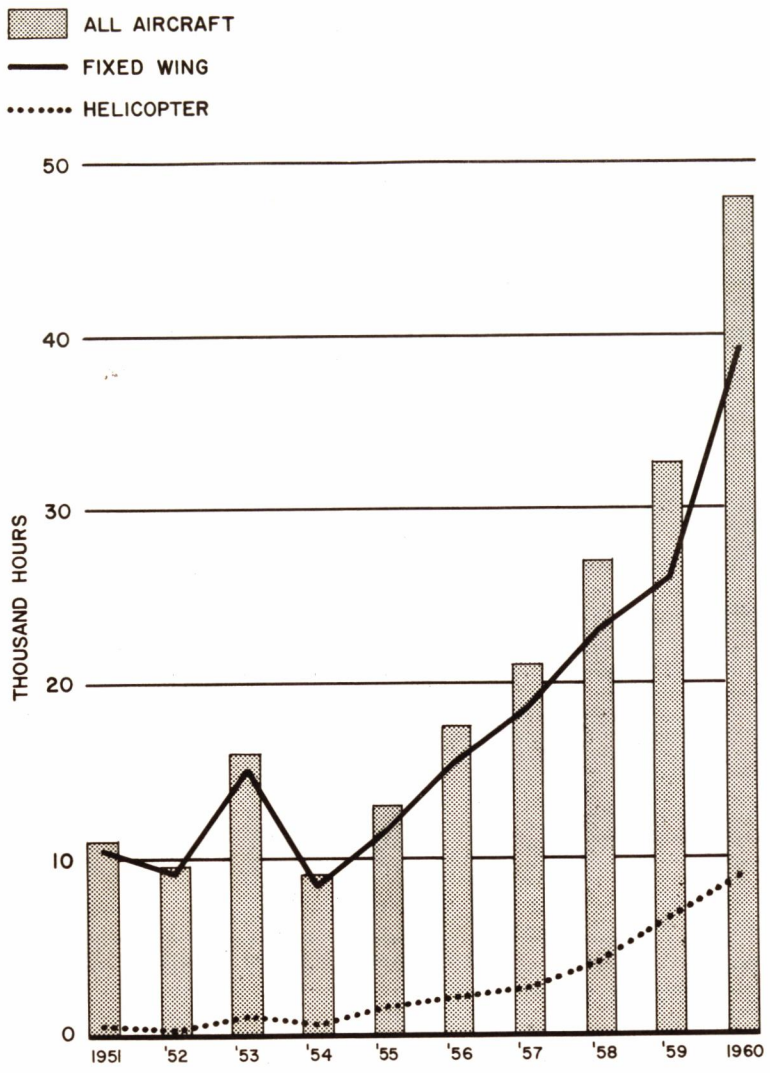

Figure 3.

a helicopter crash, and a seasonal employee died on an observational flight. Two men were killed by falling trees. Two temporarily employed fire fighters were burned to death, and another died of injuries suffered when struck on the head by a rolling rock. One employee was killed in a vehicle accident and another died of carbon monoxide poisoning in a motor vehicle.

Aircraft Use Sets Record

Aircraft use for 1960 set a record with 48,069 hours of flying time (tables 1 and 2). This was 47 percent more than 1959 and nearly three times the 1956 use (fig. 3). Fixed wing aircraft were flown 38,838 hours and helicopters 9,231 hours compared to 26,030 hours and 6,716 hours, respectively, in 1959. Commercial and privately owned aircraft were used 83 percent of this flying time. Aircraft carried 59,758 passengers, an increase of 67 percent, and 2,786,371 pounds of cargo, 115 percent more than 1959 (table 3).

A special national radio communication system for use of aircraft in flight and for air-to-ground use in aerial fire-fighting operations was established in 1960. The increasing use of smokejumpers and the large increase in use of helicopters are examples of new methods and techniques being applied. No other method, however, has made such rapid progress as the use of aerial tankers in fighting forest fires. From a small beginning in 1956, when 123,700 gallons of fire retardants were dropped on 24 fires, this method has become a major forest fire-fighting tool. Almost 6,000,000 gallons were cascaded to 1,050 fires in 1960. In 1959, 3,360,000 gallons were dropped on 507 fires.

Training Advances

The complexity of modern fire-control methods and techniques requires new training methods and intensification of training. National training on coordinating air-attack techniques with ground-attack methods was given in 1960. Five Forest Service pilots received helicopter pilot training at Army and Air Force schools. The National Fire Generalship Training School to be held early in 1961 was prepared. This is the first such servicewide training school.

Equipment Development

Testing and designing fire-control equipment is a continuing process. Studies and development of protective clothing for fire fighters have produced a safety shelter to be used in all regions in 1961. This cone-type reflective shelter will provide adequate protection in most cases of wildfire entrapment. The shelter weighs less than two pounds. More than 100 fire-control projects were worked on in 1960, 43 in aerial equipment and accessories. Several new helicopters were tested. Test apparatus was designed and constructed for determining the efficiency of spark arresters. This is the only such apparatus in use. A new hand-held backfiring torch was field-tested and will be used in 1961. A new lightweight sleeping bag was developed. Field tests utilized a dummy to determine hazards to ground personnel from air drops of fire retardants.

Fire-Danger Rating

Eight fire-danger rating systems are currently in use throughout the United States. Work to develop a unified system was undertaken in 1958. Progress is such that a unified system will be available for testing in selected areas in 1961 with the objective of having a new system by 1963.

National Fire Defense Program

A program of fire defense is necessary for civil defense planning and large-scale emergency operations. Assistance was given the Office of Civil and Defense Mobilization in developing material for staff and command training for the nation's senior fire officials.

TABLE 1.--Aircraft Use in Fire Control (By Ownership)

Hours Flown, C. Y. 1960

Region or year	Fixed Wing				Heli-copter, all owners	Total, all aircraft
	Forest Service owned	Other publicly owned	Commercial	Total		
1.....	209	11	6,955	7,175	1,125	8,300
2.....	56	20	1,319	1,395	409	1,804
3.....	484	--	4,649	5,133	917	6,050
4.....	355	38	2,278	2,671	644	3,315
5.....	3,468	--	9,304	12,772	5,145	17,917
6.....	1,467	93	5,440	7,000	988	7,988
7.....	345	13	157	515	--	515
8.....	--	432	98	530	3	533
9.....	1,278	25	336	1,639	--	1,639
10.....	--	1	7	8	--	8
Total.....	7,662	633	30,543	38,838	9,231	48,069
F. Y. 1955-59						
1959.....	5,079	673	20,278	26,030	6,716	32,746
1958.....	4,712	83	18,128	22,923	4,106	27,029
1957.....	4,210	28	14,215	18,453	2,481	20,934
1956.....	--	--	--	15,323	1,950	17,273
1955.....	--	--	--	11,645	1,236	12,881

TABLE 2.--Aircraft Use, by Type of Use

Hours Flown, C. Y. 1960

Type of use or year	Region										Total
	1	2	3	4	5	6	7	8	9	10	
Reconnaissance:											
Detection	3,496	738	2,892	723	2,094	2,270	168	474	1,401	2	14,258
Other	982	358	1,236	728	3,269	874	38	39	89	--	7,640
Transport:											
Fire personnel	1,198	91	576	776	4,916	1,785	13	--	12	--	9,367
Equipment and supplies	820	72	370	454	2,185	1,480	27	--	50	5	5,463
Fire retardants	1,037	272	839	536	3,771	719	58	--	31	1	7,264
Research, equipment development and testing	115	4	1	16	5	6	24	20	17	--	208
Other fire control	652	242	136	82	1,677	854	187	--	39	--	3,869
Total	8,300	1,804	6,050	3,315	17,917	7,988	515	533	1,639	8	48,069
Total Hours Flown, 1957-59											
1959	4,404	710	4,478	1,973	16,748	2,305	430	564	986	148	32,746
1958	5,632	591	2,420	1,537	8,953	6,474	14	83	1,204	121	27,029
1957	5,096	59	1,554	2,608	7,867	2,398	45	6	1,289	12	20,934

TABLE 3.--Air Transportation in Fire Control

F. Y. 1960

Region or year	Passengers			Freight			Fire Retardants	
	Fixed wing	Helicopter	Total	Cargo dropped	Air freight	Total	Quantity	Fires
	Number	*Number*	*Number*	*Pounds*	*Pounds*	*Pounds*	*Gallons*	*Number*
1	5,247	1,409	6,656	348,230	189,920	538,150	523,080	198
2	303	1,263	1,566	1,590	58,615	60,205	158,960	31
3	1,568	2,039	3,607	69,548	120,577	190,125	600,820	145
4	1,446	3,599	5,045	49,807	547,177	596,984	367,795	24
5	9,752	24,039	33,791	172,691	728,095	900,786	3,590,426	494
6	5,681	2,638	8,319	202,971	219,465	422,436	652,820	134
7	4	--	4	250	120	370	10,740	10
8	--	--	--	--	--	--	--	--
9	763	--	763	7,060	70,255	77,315	23,103	14
10	7	--	7	--	--	--	--	--
Total	24,771	34,987	59,758	852,147	1,934,224	2,786,371	5,927,744	1,050
F. Y. 1955-59								
1959	18,225	17,498	35,723	389,347	907,900	1,297,247	3,357,869	507
1958	14,411	11,889	26,300	714,589	769,992	1,484,581	1,560,010	322
1957	--	--	14,967	656,164	949,498	1,605,662	638,205	120
1956	--	--	18,086	636,679	921,071	1,557,750	123,700	24
1955	--	--	18,012	801,427	768,480	1,569,907	--	--

GPO 9 10 318

U FOREST SERVICE S
204